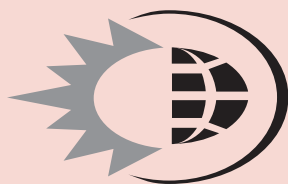




Office of Building Technology, State and Community Programs

Buildings that are more energy-efficient, comfortable, and affordable...that's the goal of DOE's Office of Building Technology, State and Community Program (BTS), which accelerates the development and wide application of energy efficiency measures.



NORTHWEST ENERGY EFFICIENCY ALLIANCE

The Northwest Energy Efficiency Alliance is a non-profit group of electric utilities, state governments, public interest groups and industry representatives committed to bringing affordable, energy-efficient products and services to the marketplace.



REFLECTOR CFL TECHNOLOGY PROCUREMENT

Reflector lamps (R-lamps) are increasingly common in homes in the United States. These bulbs are most often found in recessed downlights and track lights, both popular in new homes today. An estimated 120 to 140 million R-lamps are sold in the U.S. each year. The R-lamps typically used in homes draw 65 to 100 watts of power per lamp.

Many incandescent R-lamps could be replaced with reflector compact fluorescent lamps (CFLs) which provide similar light output while using significantly less energy. Reflector CFL models are currently produced, but they are not yet widely available and many have characteristics that limit their usefulness. The main performance concerns identified by Pacific Northwest National Laboratory (PNNL) are fit, light output, life, and affordability.

A new program sponsored by the U.S. Department of Energy (DOE) and the Northwest Energy Efficiency Alliance (NEEA) aims to improve the performance of high-efficiency reflector CFLs, and to increase their availability and use in the Northwest and throughout the United States. PNNL is implementing the program on behalf of DOE and NEEA, using a competitive technology procurement approach.¹

Market Research

PNNL recently completed market and technical research on R-lamps, and found the following:

The market for Reflector CFLs is potentially large.

The market for incandescent reflector lamps continues to grow by about 3 percent per year, with increasing competition from CFLs. Affordably priced CFLs that perform similarly to incandescents in downlight applications could capture significant market share. Retailers contacted by PNNL said they expected demand for CFL products, including reflector CFLs, to increase due to rising energy prices and renewed consumer interest in energy efficiency.

Although Reflector CFLs are being produced, their widespread market success is uncertain.

The size and optical characteristics of existing reflector CFLs differ from those of their incandescent counterparts, and whether they perform in typical residential recessed downlight fixtures in a manner acceptable to consumers is uncertain.

Existing Reflector CFLs are not widely available via traditional consumer distribution channels.

PNNL identified 26 manufacturers offering 105 models of 13-watt or greater reflector CFLs, but very few of these products are available in retail stores where most residential consumers buy lamps.



¹Technology procurement is a method to pull new technologies and products into the marketplace through competitive procurements backed by large volume buyers.

REFLECTOR COMPACT FLUORESCENT LAMPS

For more information about the DOE Office of Building Technology, State and Community Programs, contact:

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Renewable Energy
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1-800-DOE-3732
www.eren.doe.gov/buildings

For Program and Product Information on the Web:

<http://www.eren.doe.gov/buildings/emergingtech>

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Reflector CFLs Website:

www.pnl.gov/R-Lamps-rfp



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Reflector CFL Technology Procurement

To increase market acceptance of reflector CFLs, the DOE/NEEA technology procurement will seek market introduction of products with the following characteristics:

- ✓ **Short enough to fit into recessed downlight fixtures.**
Most reflector CFLs are longer than the incandescent R-lamps they are intended to replace, causing fit and glare problems. For example, most R30 CFLs (13 to 25 watts) are around 6.5 inches long, but incandescent R 30 lamps are about 5.4 inches long.
- ✓ **Deliver adequate light with beam spread similar to equivalent incandescent wide flood-type R-lamps.** Reflector CFLs cannot provide the narrow, intense beam of light possible with incandescent spot lights. However, they can mimic wider-angle “flood-type” incandescent R-lamps appropriate for use in the majority of recessed cans and a large number of track lights. The procurement will seek market introduction of lamps with beam spread and light output characteristics similar to very wide beam flood-type R-lamps.
- ✓ **Maintain light output levels and life-span in high-temperature environments.**
When CFLs are used in airtight recessed fixtures installed in insulated ceilings, heat buildup can cause decreased light output and even premature failure. Many reflector CFL manufacturers are now using amalgam technology, which allows lamps to maintain light output over a wider range of temperatures. But the effect of heat buildup on lamp life remains a concern. The procurement will seek the market introduction of lamps that are durable in high heat environments.

- ✓ **Available at affordable prices.**
PNNL found that reflector CFL prices ranged widely from \$7 to almost \$45. Incandescent R-lamps typically cost \$3 to \$8. So reflector CFL prices will need to drop in order to compete well with incandescent lamps.

- ✓ **Meet minimum ENERGY STAR[®] specifications.**
Only three manufacturers offered ENERGY STAR[®] rated reflector CFLs as of July 2001. The minimum ENERGY STAR[®] efficacy requirement for CFLs with reflectors is at least 33 lumens per watt (l/w) for lamps of less than 20 watts, and 40 l/w for 20 watts or more. There are no apparent technical barriers to ENERGY STAR[®] approval for more reflector CFLs, and many are currently undergoing testing to gain approval.

Program Update

Current efforts are focused on completing the RFP and finalizing a strategy for promoting winning reflector CFL models. To ensure that your company is included on our RFP distribution list or to inquire about marketing winning reflector CFL models once winners have been selected, send an email inquiry to kathi.ruiz@pnl.gov.

Key Program Dates include:

October 25, 2002: Request for Proposals sent to industry.

November 22, 2002: Proposals to supply reflector CFLs due to PNNL.

January 16, 2003: Initial product selection made. Life testing begins.

October 17, 2003: Selected models are announced and orders begin.